

### **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### **LISTING OF CLAIMS**

1. (Currently Amended) An apparatus for detecting neural signals emanating from inside a brain within a cranium, having a thickness, that is covered by a scalp and for transmitting the signals to an external receiver, comprising:
  - a. a first conductive skull screw, capable of being implanted in the cranium and under the scalp, having a substantially constant outside diameter and having a predefined length that corresponds to the thickness of the cranium ~~that is at least as long as the thickness of the cranium~~, but less than a length ~~thickness~~ that would cause the first conductive skull screw to invade the brain when implanted into the cranium;
  - b. a second conductive skull screw, capable of being implanted in the cranium and under the scalp, having a substantially constant outside diameter and having a predefined length that corresponds to the thickness of the cranium ~~that is at least as long as the thickness of the cranium~~, but less than a length ~~thickness~~ that would cause the second conductive skull screw to invade the brain when implanted into the cranium; and
  - c. a transponder electrically coupled to the first conductive skull screw and to the second conductive skull screw, the transponder capable of being implanted between the cranium and the scalp, the transponder capable of detecting a differential electrical potential between the first conductive skull screw and the second conductive skull screw and generate a signal representative thereof, the transponder also capable of transmitting the signal to the external receiver.

2. (Original) The apparatus of Claim 1, wherein the transponder comprises:
  - a. an amplifier that amplifies the signal;
  - b. a transmitter that transmits the signal; and
  - c. a power induction circuit that is capable of converting an electromagnetic signal into a current used to drive the amplifier and the transmitter.
3. (Original) The apparatus of Claim 1, wherein the first conductive skull screw and the second conductive skull screw comprise stainless steel.
4. (Cancelled)
5. (Cancelled)
6. (Currently Amended) A method for communicating a neural signal inside a brain to a remote receiver, comprising the steps of:
  - a. inserting a first conductive skull screw in a cranium under a scalp in a first location the first conductive skull screw having a substantially constant outside diameter and having a predefined length that corresponds to the thickness of the cranium, but less than a length that would cause the first conductive skull screw to invade the brain when implanted into the cranium;
  - b. inserting a second conductive skull screw in a cranium under the scalp in a second location, the second conductive skull screw having a substantially constant outside diameter and having a predefined length that corresponds to the thickness of the cranium, but less than a length that would cause the first conductive skull screw to invade the brain when implanted into the cranium, the first location and the second location chosen so that a change in neural electrical potential between the first

- conductive skull screw and the second conductive skull screw occurs when a patient performs a neural task;
- c. implanting a transponder under the scalp, the transponder being electrically coupled to the first conductive skull screw and to the second conductive skull screw;
  - d. detecting the change in neural electrical potential between the first conductive skull screw and the second conductive skull screw; and
  - e. transmitting a signal representative of the change in neural electrical potential from the transponder to the remote receiver.
7. (Original) The method of Claim 6, further comprising the step of amplifying the differential potential before the transmitting step.
8. (Original) The method of Claim 6, further comprising the steps of powering a transponder used to transmit the signal with a power induction circuit.
9. (Cancelled)
10. (Cancelled)